

REMARKS/ARGUMENTS

Information Disclosure Statement

To ensure compliance with the disclosure requirements, a supplemental Information Disclosure Statement is enclosed listing references recently cited on the parent application 09/626,929.

Proposed Drawing Changes

The Examiner's disapproval of the proposed corrections to Figure 7 has been noted. While it is applicant's continued position that these amendments are allowable, to facilitate further examination, these amendments are now withdrawn, without prejudice.

112 First Paragraph

Claims 1, 4, 5, 7-9, 11, 12 and 17-22 stand rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The Examiner had two main points under this rejection, as detailed below.

Firstly, the Examiner asserted that the amendments and discussion concerning the "common coolant" were incorrect. The Examiner argued that the proposed amendments were inaccurate, in that the "common coolant" flows through the heat exchangers 134, 164 and not directly through the heat exchangers 118 and 126. It is applicant's position that while the common coolant does not flow directly through the heat exchangers 118, 126, it is nonetheless correct to describe them as being cooled by a common coolant, this cooling being achieved indirectly through respective heat transfer or cooling circuits.

The Examiner's second point was that the bottom half of Figure 7 is not clearly identical with the top half of Figure 7.

On this basis, the Examiner argued that "It cannot be stated with any reasonable assurance that the applicant was in possession of the subject matter (namely the common coolant supply for heat exchangers 118 and 126 and 118a and 126a) claimed..."

Again, applicant maintains that the previously submitted amendments were allowable, but to facilitate further examination, claim 1, and other claims, are being amended in two respects. Firstly, details of the cooling loop or circuit for each heat exchanger is being introduced, so that it is clear that the "common coolant" flows through a secondary or auxiliary heat exchanger. Secondly, while claim 1 still provides an apparatus for conditioning two separate gas streams, it is no longer suggested that there is a common coolant supply for the heat transfer circuits for both gas streams; rather, it is now indicated that there is a respective common coolant supply for the heat transfer circuits of each gas stream.

It is submitted that these amendments are fully in accordance with the original disclosure and the Examiner's interpretation of the application. Accordingly, it is submitted that no new matter has been added.

35 U.S.C. 112, Second Paragraph

Claims 1, 4, 5, 7-9, 11, 12 and 17-22 stand rejected under 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Again, the Examiner argued that it is mis-descriptive to claim in claim 1 that first and third heat exchangers (118 and 126) as being cooled by a common coolant supply, on the basis that each of them is in fact cooled by a separate coolant, and that the common coolant supply only then cools those separate coolants in further secondary or auxiliary heat exchangers.

As noted above, claim 1 has been amended to address this concern, so it is submitted that these claims, to the extent that they are retained, are now fully compliant with 35 U.S.C. 112 in its entirety.

As mentioned above, claim 1 is being amended to make it clear that for each of the first and third heat exchangers, conditioning the first process gas, there is a corresponding temperature control circuit; correspondingly, for each of the second and fourth heat exchangers, conditioning the second process gas, it is now provided that there is a corresponding second temperature control circuit. Each of these temperature control circuits is, generally, similar, and includes a conduit for circulating a fluid, a

pump for pumping the fluid and a respective "cooling means", the cooling means being, essentially, a further or auxiliary heat exchanger.

For the first and third heat exchangers, conditioning first process gas (corresponding to the heat exchangers 118 and 126), their respective temperature control circuits are connected to a common coolant supply; the common coolant supply being connected to the corresponding first cooling means.

Similarly, for the third and fourth heat exchangers, respective temperature control circuits are provided with similar elements. A separate, second coolant supply is provided for the second cooling means, this second coolant supply then being "common" to just the second temperature control circuits, associated with conditioning the second process gas stream.

As a consequence to these amendments, claim 7 and claim 9 are being cancelled, with claim 8 now being dependent from claim 1. Claim 17, 19 and 20 are also being cancelled, and the dependencies of claims 18, 21 and 22 are being amended accordingly.

A new claim 23 is being introduced. This claim essentially corresponds to the format of claim 1, but is directed to humidifying or conditioning a single process gas stream. Thus, it provides for first and second heat exchangers for cooling and reheating the gas stream. Each heat exchanger is provided with a respective temperature control circuit, and the two temperature control circuits are connected to a common coolant supply. This claim is essentially an apparatus claim corresponding to the allowed method claim of the parent application 09/628,929

New claims 24, 25 and 26 introduce further subsidiary features and are dependent from claim 23.

New claim 28 is an independent claim, corresponding to claim 1 in that it is concerned with the humidification of two gas streams. It is specified in claim 28 that these gas streams are a "fuel gas stream" and "an oxidant gas stream". Otherwise, claim 28 generally corresponds to claim 1. Again, the feature of separate heat transfer circuits for the heat exchangers is specified, and the provision of a first common coolant supply for the fuel gas conditioning, and a second coolant supply for the oxidant gas conditioning are also provided.

Claims 29 and 30 are new dependent claims, dependent from claims 28 and 29, respectively.

Rejection under 35 U.S.C. 103

Before addressing this rejection in detail, it is noted as a general point that the issues here closely correspond to arguments on the parent application 09/628,929. For that application, the Examiner allowed method claims generally corresponding in scope to the claims of the present application.

Significantly, allowed claim 1 of the '929 application concerned with humidifying just a single gas stream, and it specifies the steps of passing a first heat transfer fluid through a first temperature control circuit and a second heat transfer fluid through a second temperature control circuit, with each of the heat transfer fluids passing through further heat exchangers, both of which are cooled by a common coolant supply.

As such, it is submitted that the present claims are generally allowable for the same reason as those advanced for the '929 application. It is noted that similar art was cited. The most recent rejection of the claims, now overcome, in the '929 application relied primarily on JP 5-256468, Weitman, Getchel et al. and other art. The first two references are relied upon here, and the Getchel et al. reference has been submitted under the duty of disclosure, to ensure that it is of record on this application.

Claims 1, 7 and 22 stand rejected under 35 U.S.C. 103(a) over the combined teachings of JP 9-35737, JP 5-256468 and Weitman.

Firstly, it is noted that this art and arguments related to it have been exhaustively discussed in earlier prosecution of this application. For the sake of brevity, without prejudice and without conceding the validity of the Examiner's arguments, applicant below addresses what appear to be salient, outstanding issues.

Applicant maintains that the Examiner has still failed to make out a proper *prima facie* obviousness argument with respect to these three references. Weitman and JP '468 are not clearly analogous art. There is simply no reason or basis to consider combining them in the manner suggested, and in particular, there is no reason or basis for combining them with the JP '737 citation. JP '737 is concerned with a wholly different humidification scheme where simple plate-type humidifiers are provided, combined with

a fuel cell stack. There is simply no motivation or reason in this art for considering replacing these with some cumbersome proposal taken from humidification schemes for building structures and the like.

With respect to the details of JP '737, the Examiner cites the Fleck reference, to argue that the humidification in this Japanese reference is not "arbitrary". Applicant's point is that the humidification technique in this reference is wholly different from the present invention. It relies on moisture passing through a membrane to a gas flying across the other side of the membrane. As such, the level of humidification will depend upon a number of factors such as characteristics of the membrane, temperature, flow rate of the gas, etc. It is in no way comparable to the technique of the present invention where a gas is first oversaturated, cooled to condense out excess moisture, and then reheated to give a known and specific relative humidity. It is submitted that, necessarily, the control on the humidification level provided in JP '737 can never be anywhere near as exact as the present invention and cannot provide for fast and rapid changes to required humidification levels.

More significantly, if the Examiner believes that the JP '737 reference, or the other references, disclose the details of the invention as now claimed, the onus is on the Examiner to detail where these features can be found in the references.

With respect to the argument concerning incorporation of elements from other references into JP '737, the Examiner argued that, since, in the Examiner's opinion, the claims of the present invention specify no degree of compactness, then there is no requirement for small size and this is not a factor in the inquiry under 35 U.S.C. 103. It is submitted that this is incorrect.

It is submitted that the correct inquiry is whether there is any reason, basis or motivation in this art to combine the references in the manner taught; if there is, the next question is whether the notional combination then provides the features of the present invention as claimed. In the present case, as previously argued, in view of the numerous, listed differences in the art, it is maintained that there is no such reason or basis for the proposed combination.

Turning to the common coolant issue, now clearly detailed in claim 1, in a manner that it is submitted should be acceptable to the Examiner, the Examiner relied

primarily on Getchel et al., U.S. patent 6,415,858 for teaching this limitation. Firstly, it is submitted that Getchel et al. is, most clearly, "non-analogous" art. Getchel et al. is concerned with a temperature control system for work piece chuck. It is in no sense concerned with either fuel cell technology or humidification of process gas streams. Accordingly, it is submitted that this rejection under 35 U.S.C. 103 must fail for this reason alone. It can also be noted that Getchel et al. is concerned with a refrigeration cycle, where a refrigerant is evaporated and condensed, again something that is not required by the present invention and would serve no useful function. Again, supporting the conclusion that this is clearly non-analogous art.

If one examines the details of Getchel et al., it is clear that it fails to disclose all the limitations of the invention as presently claimed. There is no provision of separate heat exchangers each with its own temperature control circuit, and each of those circuits including a further heat exchange or cooling means through which a common coolant passes.

Accordingly, any notional or theoretical combination of this reference with other references would fail to teach all the claim limitations.

Accordingly, for this reason, it is submitted that claim 1 and the other independent claims are therefore clearly allowable.

With respect to the other claims, it is submitted that they are allowable for being dependent from allowable independent claim and for introducing further patentable features.

Early review and allowance are requested.

Respectfully submitted,

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